Servicing Manual

467896232 • Issued 07/03/03

Centura S1

Contents

	Page
A • DIFFERENT FAILURES SITUATIONS	***4 - 5***
B • TECHNICAL INFORMATION	***6***
C • MOTORS SETTING UP PROCEDURE	***7-8***
D • SET OF TOOLS	***9***
E • MAINTENANCE AFTER 2 000 HOURS	***9***
F • SPARE PARTS TO BE KEPT IN STOCK	***10***
G • APPENDICES	

Spare parts list
General block scheme
Detailed motor block cabling

A • DIFFERENT FAILURES SITUATIONS

1 • THE GREEN LED IS OFF, THE CENTURA IS OFF. (please refer to the electrical scheme)

- Check the 2 fuses at the ON/OFF switch
  Fuse 6,3 x 32 - Temporised 750mA Ref.: 4610007434

- Open the back casing.

- Check the voltage at the power supply card (90 to 240 V)

- Check the out voltage of the power supply card 12V ± 0,5V
  and the fuse 2 amps Ref.: 4610006866

- Check the voltage of the power and communication distribution card: 12V ± 0,5V

- If all the values above are exact, change distribution card.
  Ref.: 4610007583

2 • THE GREEN LED IS FLASHING, THE HAND CONTROL IS OFF.

- One motor bloc is defective.

- Identify the defective motor block: switch off the machine and disconnect alternatively one of the two motors and then switch ON the machine.

- Open the defective motor and check the potentiometer connection on the PCB card (soldering, mechanical junction and the potentiometer mechanical fixating).

- If the problem is still occurring, then change the PCB card, set up the motor block with its notice or send the complete motor block to Smith & Nephew Kinetec.

3 • THE DISPLAY SCREEN SHOWS RUN AND THE CENTURA DOESN'T WORK

- Identify the defective motor bloc: by switching OFF the machine and disconnecting alternatively one of the two motors and then switching ON the machine.

- If the problem still occurring, change the hand control cable, Ref.:4610007608.

- If the defect does exist for a motor, open the motor block, check the electrical connections .

- Change the spiral cable. Ref.:4670019445

- If the problem still occurring, change the PCB card, then set up the motor block using the notice.

4 • ERROR MESSAGE

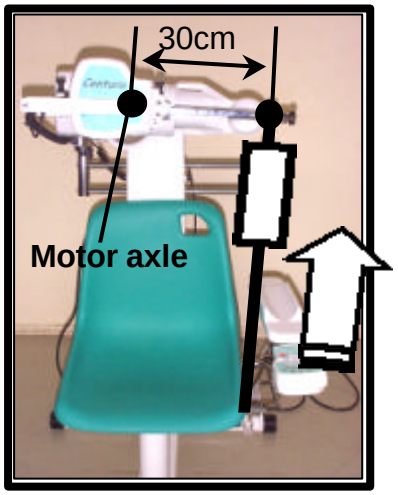
Message	*Diagnosis*	*Intervention*
ANGULAR POSI.	Potentiometer cable breaking between the copy potentiometer and the PCB card.	Check the electrical continuity of each electrical wire.
NO MOVEMENT	- The motor strap is broken. - The motor block is defective.	- Change the strap. - Change the motor block.
BAD WAY	The potentiometer electrical wires are inverted.	
LOAD MAXI	The motor consumption is over the limits.	Change the motor.
SERV. MOTOR	The machine has 2 000 hours service.	You have to do a revision.
POWER SUPPLY	The power supply doesn't work correctly.	Change the power supply.
DEFAUT AXE DECONNECTE	- The spiral cable is disconnected while the machine is working. - If the problem still remains, the spiral cable is defective.	- Check the connections. - Change the spiral cable.
SELECT VALID MOVEMENT	The programmed movement isn't the one connected.	Connect the right movement. If the problem still remain, change the spiral cable and the PCB card if necessary.

B • TECHNICAL INFORMATION

1 • LOADS SETTING UP

The Centura is set up during the assembling:
18daN at 30cm for the M1 motor
and 9daN at 30 cm for the M2 motor.

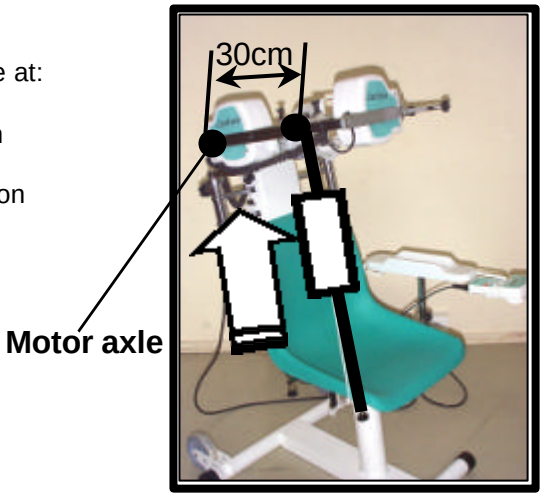
Rotation motor



The inversion must be at:

- 0° for the rotation
- 90° for the abduction

Abduction motor



These values are set up by parameters.
The access to the parameter mode is obtained by simultaneously pressing the following key limito limitμ+ and -,
and for the access code press limito limitμ - +, and confirm + -, limit μ limit o.

WARNING, the access to loads MVT, low, high and the motor load is allowed.

In no case, You should modify the load MVT 1 or 2 values.

Select by the + or - keys the M1 or M2 motor load menu
Validate by pressing the limit μ key to access th these parameters.

M1 = abduction motor M2 = rotation motor.

The force of the machine is adjustable by using the motor load parameter
(% compensation level : XXX by pressing the + or - keys.

Don't forget to validate by the pressure on the limit μ key.

2 • INFORMATION

Primary consumption: 100mA

ABD motor consumption: between 400 and 500mA after working 5 minutes at the max speed.

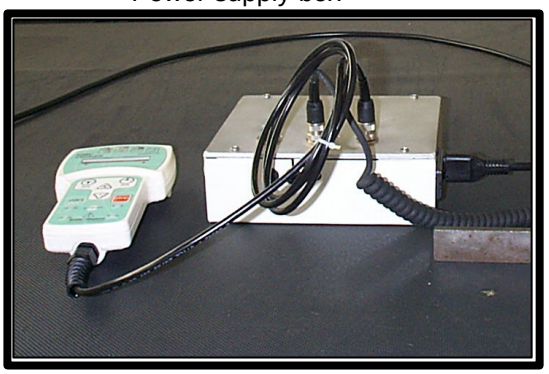
ROT motor consumption: between 100 and 170mA after working 5 minutes at the max speed.

Maximum speed (about): ABD 140°/min
ROT 140°/min

Minimum speed: ABD 60°/min
ROT 60°/min

C • PROCEDURE FOR THE MOTOR BLOC SETTING UP

Power supply box



- Use the adapted tools (KINETEC tools)

- Connect the spiral cable to the power supply box.

- Select the movement on the hand control by pressing the ABD or ROT key.
  The orange led (ABD or ROT) should be a light. If not please report to the case 1 page 8.

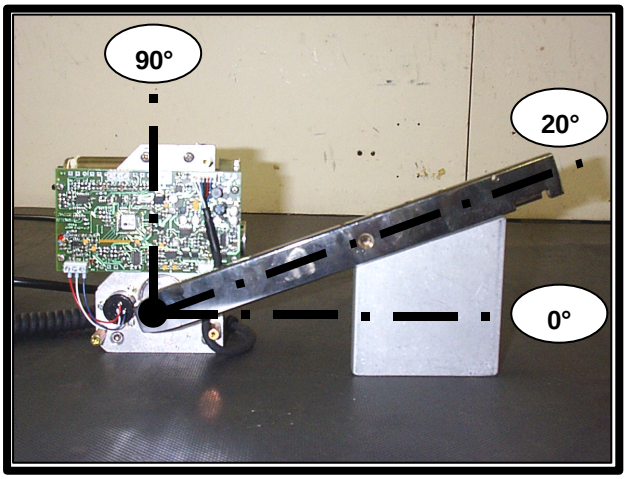
- Program the following amplitudes
  * ABD: lower limit 20°
    upper limit 90°

or

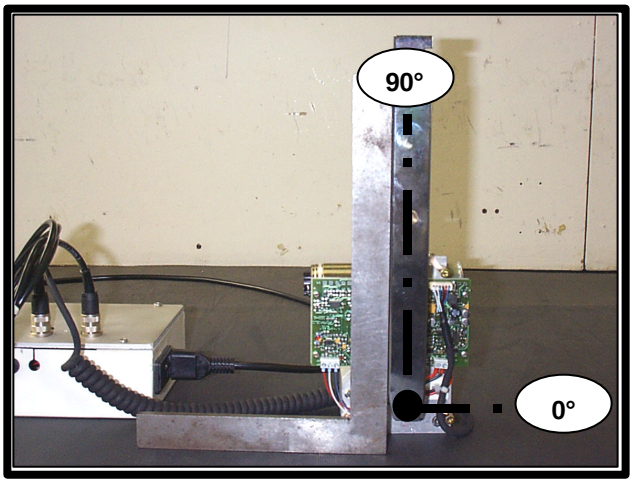
  * ROT : lower limit - 60°
    upper limit 0°

- Put the motor bloc on a table with the arm in order to proceed to the setting up with the square.

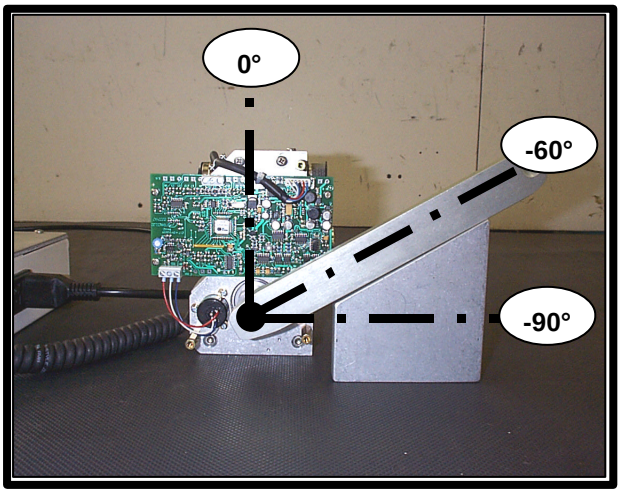
Abduction 20°



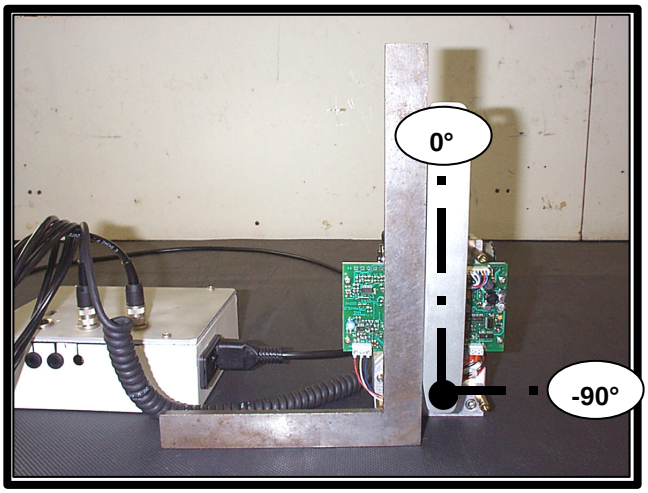
Abduction 90°



Rotation –60°



Rotation 0°



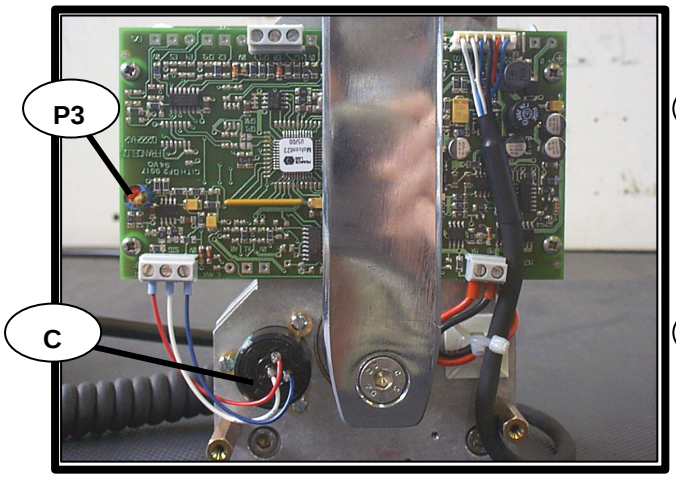
Two cases can occur:

Case 1:

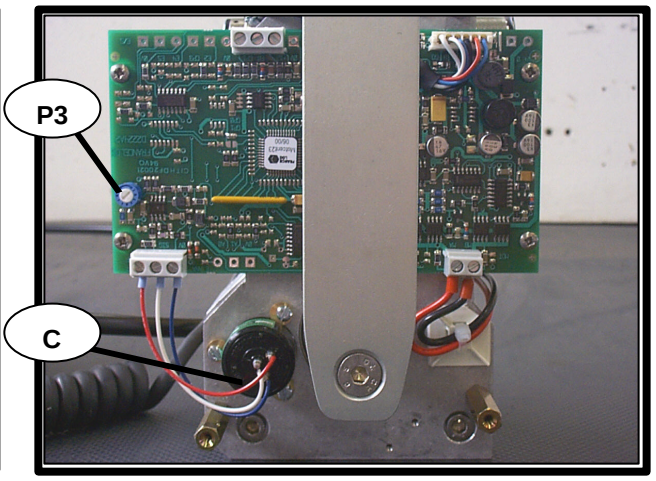
The following message appears on the LCD screen:

M1 (or M2) ANGULAR POSI
M1 = abduction motor
M2 = rotation motor
Turn the copy potentiometer (c) until the orange led (ABD bloc motor for M1, ROT bloc motor for M2) is light.
After, refer the case 2

Abduction motor



Rotation motor



Case 2:

The led of the concerned movement is light, and no message error appears.

Turn the copy potentiometer to adjust:
the -60° for the rotation motor
or the 20° for the abduction motor
and check with 2 patterns.

Let the motor block turn until 0° for the rotation motor or 90° for the abduction motor.

Adjust the value (0° or 90°) with the P3 trimmer on the PCB card.

Check again the 20° for the abduction motor.
Check again the - 60° for the rotation motor.

If one of the value below has changed, take the case 2 procedure again.

Put a varnish drop on the P3 trimmer.

D • SET OF TOOLS

- 1 20daN dynamometer
- 1 amplitude setting up arm
- 2 gauges to set up the -60° and 20° amplitudes and one 90° square
- 1 Kinetec power supply.

E • REVISION DES 2000H (message SERVICE)

Check :

- The integrity of the wiring.
- The integrity of the connectors
- The loads
- All connections
- The integrity of the driving belt and the tightness.
- All mechanic coupling (screw gluing, etc…)
- The maximum range of motion of the different movements.
- Grease all joints
- Check the electrical security (ground continuity, dielectric, leaking current).

F • SPARE PARTS TO BE KEPT IN STOCK

For – 50 machines :

Product code	Designation	Q.
4670019445	Motor cable	1
4610007434	Fuse 750mA	10
4610006866	Fuse 2 A	10
4610007591	Hand control	1
4670019619	M8 male black knob	2
4625000762	M8 female black knob	2
4650001371	Forearm strap	4
4650001389	Arm strap	10
4610007583	Board connection	1

Product code	Designation	Q.
4610007327	Motor electronic card for ABD	1
4670019627	Motor electronic card for ROT	1
4635006685	Driving belt	1
4635007196	Rotation palmar support	1
4635007188	Flex/Ext palmar support	1
4635007211	90° elbow support	1
4610007608	Hand control cable	1
4610007012	fuse TR5 2A	5

For + 50 machines :

Product code	Désignation	Q.
4670018976	Rotation arm slider	1
4670018968	Forearm support	1
4670018992	Maulstick brace	1
4620001690	M6 nut	1
4635007211	90° elbow support	1
4635007196	Palmar support Rot.	1
4670019429	Complet Splint Flex. Ext.	1
4670019213	Screwed plug	1
4670019073	Palmar support	1
4670019023	Rotating palmar support	1
4670019247	Upper armrest support	1
4670019255	Lower armrest support	1
4670019007	Forearm slider	1
4670019015	Shank Palmar Support	1
4620003076	M8 x 16 screw	1
4630000343	8 x 18 x 2 washer	1
4620001765	M8 Locknut	1
4625000704	Pointer knob	1
4635007229	Guide Palmar Support	1
4635007188	Abduction Palmar Support	1
4615002710	Blue Kinetec label	3
4615002728	Red Kinetec label	3
4636000280	Wheels	2
4670019081	Brace Wheels	2
4620000163	8 x 50 screw	2
4637000528	Black cover	4
4635007435	161 x 40 Black	4
4625000754	Hightening handle	1
4635007394	Hightening handle nut	1
4635007401	Hightening handle binding	1
4625000796	Hightening handle protection	1
4670019453	Abduction motor box with cables	1
4670017829	Driving-pinion	1
4635006578	Pinion	1
4639000500	Ball bearing 7200	2
4635006908	Adjustable ball bearing	1
4670017837	Pulley	1
4670017803	Motor	1
4610007327	Motor Electronic Card	1
4635007360	Abd. right	1
4635007352	Abd. left	1
4670019445	Spiral electric cable	1
4610005298	Male cable receptacle (7 pins)	1
4615002679	Left motor label	1
4615002687	Right motor label	1

Product code	Désignation	Q.
4635007170	Moss	1
4670019148	M1 right arm	1
4670019156	M1 left arm	1
4670019172	Left arm slider	1
4670019180	Right arm slider	1
4635007302	Arm roller	2
4635007310	Arm upper pin	2
4670018926	Strap	1
4670019205	Traverse nut	1
4635007328	M1 arm slipper	2
4635006685	Driving belt	1
4670017845	Pulley	1
4670019560	M1 Strap Arm	1
4670019552	Arm traverse	1
4670019461	Rotation cabled motor box	1
4635007138	Pulley	1
4610007575	Rotation Motor	1
4635007386	Rotation right	1
4635007378	Rotation left	1
4635007170	Moss	1
4670019065	M2 right arm	1
4670019057	M2 left arm	1
4670018950	M2 handle	1
4670019544	M2 guide	1
4670018942	Up/down system slider	1
4670018934	Up and down system frame	1
4635007443	Gas-jack	1
4670019031	Extremity link	2
4625000770	M8 x 40 screw	2
4637000586	Cover	4
4637000560	Cover	4
4670019114	Locking slider	1
4625000762	Female black button	3
4670019297	Upper casing	1
4670019304	Lower casing	1
4645000784	Elastic strap	21
4610007583	Board connection	1
4610007434	Fuse	2
4610007591	Hand control	1
4610007608	Hand control cable	1
4615002645	Centura LCD Key board	1
4615002653	Centura Key board	1
4635005736	Chair plastic cover	1
4670019396	Armrest	1